

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

IN THE APPLICATION OF:

TIANYI LIAO

CASE NO.: LP4820 US NA

APPLICATION NO.: 10/728,358

CONFIRMATION NO.: 6394

GROUP ART UNIT: 1771

EXAMINER: ANDREW T. PIZIALI

FILED: DECEMBER 3, 2003

FOR: SIZE-COVERED COMPOSITE YARNS AND METHOD FOR MAKING SAME

**AMENDED APPEAL BRIEF PURSUANT TO 37 C.F.R. §41.37**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Attention: Mail Stop Appeal Brief - Patents

Sir:

This is an appeal to the Board of Appeals from an Action mailed August 28, 2006, in which the Examiner finally rejected claims 9-20 of the above-identified applications.

No fee is believed to be due with this submission, as the fee was included with the original filing of this amended Appeal Brief. However, should any fee be due, please charge the fee to Deposit Account No. 50-3223.

**1. REAL PARTY IN INTEREST**

The real party in interest in the present appeal is Invista North America S.à r.l., a *société à responsabilité limitée*, incorporated under the laws of Luxembourg, having acquired rights from E.I. DuPont De Nemours and Company by way of an assignment recorded in the United States Patent and Trademark Office at Reel 015286, Frame 0708, having acquired rights from the inventors by way of an assignment recorded in the United States Patent and Trademark Office at Reel 014579, Frame 0986.

**2. RELATED APPEALS AND INTERFERENCES**

No related appeals or interferences are known to the Appellant or o Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

**3. STATUS OF THE CLAIMS**

Claims 9-20 are currently pending in the application. Claims 9-20 stand finally rejected. The rejections of Claims 9-20 are being appealed.

**4. STATUS OF AMENDMENTS**

No amendments have been made to the claims subsequent to the final rejection.

**5. SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention is directed to a size-covered composite yarn which is an alternative to composite yarns where the elastomeric fibers are covered with hard yarns in a single-wrapping, double-wrapping, core spinning, twisting or entangling method. The present invention avoids the necessity of covering the elastomeric strands in this manner by providing a composite aligned yarn which has been immersed in a sizing solution subsequent to the positioning of the elastomeric stand and the hard yarn in an aligned manner. In other words, the hard fibers are substantially parallel to the elastomeric strands along the entire length of the yarn. The three independent claims currently pending are Claims 9, 17 and 19.

Claim 9, which is supported in the specification at page 6 paragraph [0021], is directed to a fabric having at least one elastomeric fiber (53 in FIGS. 3A and 3B) forming a strand with a total draft in a range from 1.2X to 6.2X of an original spun length of the strand;

at least one hard yarn selected (27 in FIGS. 3A and 3B) from the group consisting of: synthetic fibers, natural fibers and a blend of synthetic and natural fibers, wherein said hard yarn is aligned adjacent and substantially parallel to said strand to make an aligned yarn; and

a dried or cured size material (69 in FIGS. 3A and 3B) forming an adhesive that adheres the strand and hard yarn of the aligned yarn together.

Claim 17, which is supported in the specification at page 6, paragraph [0022], is directed to an elastic woven fabric after final finishing, including strands of bare, essentially untwisted, and elastomeric fibers (53 in FIGS. 3A and 3B) in the weft that are substantially parallel and adjacent to hard yarns in the weft (27 in FIGS. 3A and 3B).

Claim 19, which is supported in the specification at page 6 paragraph [0023], is directed to elastic woven fabric after final finishing, including strands of bare, essentially untwisted elastomeric fibers (53 in FIGS. 3A and 3B) in the warp that are substantially parallel and adjacent to hard yarns (27 in FIGS. 3A and 3B) in the warp, wherein the ratio of said elastomeric fibers to hard yarns in the warp ranges from 1:2 to 1:4.

## **6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- I. Are claims 9-20 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 5,896,634 to Brodowski et al. ("Brodowski")?
- II. Are claims 9-10 and 12-20 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with Japanese Patent No. 4 733 754 to Nakatomi et al. ("Nakatomi")?
- III. Are claims 9-16 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 3,719,664 to Hayes et al. ("Hayes")?
- IV. Are claims 13-20 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 5,896,634 to Brodowski et al. ("Brodowski") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

V. Are claims 13-20 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with Japanese Patent No. 4 733 754 to Nakatomi et al. ("Nakatomi") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

VI. Are claims 13-16 obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 3,719,664 to Hayes et al. ("Hayes") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

## **7. ARGUMENTS**

I. Claims 9-20 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 5,896,634 to Brodowski et al. ("Brodowski").

This rejection is respectfully traversed on the grounds that the Examiner has failed to establish a *prima facie* case of obviousness because the references fail to disclose, teach or suggest every element of the present claims. Specifically, no reference discloses, teaches or suggests at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn.

Among the cited references, the Examiner has only cited Strachan as allegedly teaching a composite yarn having at least one elastomeric fiber forming a strand and at least one hard yarn wherein the hard yarn is aligned adjacent and substantially parallel to the strand to make an aligned yarn. However, Strachan does not disclose, teach or suggest the alignment of at least one elastomeric strand and at least one hard yarn as in the present invention.

Strachan is directed to a composite yarn including hard yarns which cover and protect an elastic yarn. This is described at Column 2, lines 13-16, where "relatively inelastic filaments [are] entangled tightly around the elastic yarn *in intermittent zones of random braided structure and otherwise extending substantially parallel to the elastic yarn.*" (emphasis added.) This is describing a conventional entangling method where the hard yarns are entangled or intermingled with the elastic yarns.

The covering by entangling method is also described in the present specification and is shown in present FIG. 1F. In the relaxed position shown in 1F, it can be seen that along the length of the elastic yarn, the hard yarns are intermingled at specific regular points. The

position of the yarn components when in the relaxed and stretched positions are described by Strachan at column 2, lines 6 through 18:

**The relaxed composite yarn is bulky and is capable of being extended at least 100 percent in length when stretched until the relatively inelastic filaments first become load-bearing. When stretched until the hard fibers first become load-bearing, relatively inelastic filaments entangled tightly around the elastic yarn in intermittent zones of random braided structure and otherwise extending substantially parallel to the elastic yarn, there being an average entanglement spacing of less than 10 centimeters.**

The yarn of Strachan does not provide a composite yarn having components which are aligned adjacent and substantially parallel to each other. To the contrary, the yarn of Strachan includes intermittent entangled zones throughout the length of the yarn. Strachan does not provide yarn having an elastic strand aligned with hard fibers because the yarn prepared by Strachan is entangled.

When the yarn of Strachan is in a stretched position such that the hard yarn becomes load bearing, there are portions of the yarn where an elastomeric strand and a hard yarn which are "substantially parallel" to each other. However, Strachan provides an entangled yarn, not an aligned yarn as in the present invention.

Strachan clearly provides no disclosure, teaching or suggestion of a composite yarn wherein the hard yarn and elastomeric strands have been linearly positioned with respect to each other to form an aligned yarn, as in the present invention. Moreover, Strachan points out that there is no need to fuse the fibers at Column 9, lines 40-41, which is the result of adding a size material in the present invention.

Even if, *arguendo*, the yarn of Strachan was aligned, Strachan teaches away from the present invention. As described in the previous paragraph, Strachan points out that the step of fusing fibers together is unnecessary. One following such a teaching would not be led to the present invention which requires a size material that forms "an adhesive that adheres the strands and the hard yarn of the aligned yarn together." The yarn of the present invention is only able to avoid the prior art covering methods by including a size material which allows the preparation of an aligned yarn.

Furthermore, the meaning of the word "align" is well-known to the person of skill in the art. The Cambridge Dictionary of American English defines the verb "align" as "to put (two or

more things) into a **straight** line.” (emphasis added). Merriam-Webster expands on this definition as follows:

**Main Entry: align**

**Function: verb**

**Etymology: French aligner, from Old French, from a- (from Latin ad-) + ligne line, from Latin linea**

**transitive senses**

**1 : to bring into line or alignment**

**2 : to array on the side of or against a party or cause**

**intransitive senses**

**1 : to get or fall into line**

**2 : to be in or come into precise adjustment or correct relative position**

The hard yarn and elastic fibers of Strachan are clearly not “aligned” since they are entangled at numerous points along the length of Strachan’s yarn. By contrast, the present claims do not require that mere portions of the yarn be aligned, but that the yarn itself includes a hard yarn and an elastomeric which are substantially parallel to each other to form an aligned yarn. This is in accordance with the well-known meanings of the term “align,” which is derived from a Latin word meaning “line.” Therefore, the elastomeric strand and the hard yarn of the present invention must each form a line in order to form the aligned yarn.

It is clear with respect to the present invention the term align requires that the hard yarn and elastomeric strand each be in a straight line and substantially parallel to each other. This linear relationship between the hard yarn and the elastomeric strand is plainly evident as shown in Figures 3A and 3B. The hard yarns and the elastomeric strand as shown in Figures 3A and 3B are plainly set forth in-line.

Brodowski provides no disclosure that overcomes the deficiency of Strachan in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn. Furthermore, Brodowski is not properly combinable with Strachan given that Strachan teaches away from the addition of a size material. Accordingly, the combination of Strachan with Brodowski fails to establish a *prima facie* case of obviousness with respect to claims 9-20.

II. Claims 9-10 and 12-20 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan (“Strachan”) in combination with Japanese Patent No. 4 733 754 to Nakatomi et al. (“Nakatomi”).

Nakatomi provides no disclosure that overcomes the deficiency of Strachan in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn Strachan (as discussed under (I)). Furthermore, Nakatomi is not properly combinable with Strachan given that Strachan teaches away from the addition of a size material. Accordingly, the combination of Strachan with Nakatomi fails to establish a *prima facie* case of obviousness with respect to claims 9-10 and 12-20.

III. Claims 9-16 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 3,719,664 to Hayes et al. ("Hayes")?

Hayes provides no disclosure that overcomes the deficiency of Strachan in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn Strachan (as discussed under (I)). Furthermore, Hayes is not properly combinable with Strachan given that Strachan teaches away from the addition of a size material. Accordingly, the combination of Strachan with Hayes fails to establish a *prima facie* case of obviousness with respect to claims 9-16.

IV. Claims 13-20 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 5,896,634 to Brodowski et al. ("Brodowski") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

Miller provides no disclosure that overcomes the deficiencies of Strachan and Brodowski in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn, as discussed under (I). Accordingly, the combination of Strachan and Brodowski with Miller fails to establish a *prima facie* case of obviousness with respect to claims 13-20.

V. Claims 13-20 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with Japanese Patent No. 4 733 754 to Nakatomi et al. ("Nakatomi") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

Miller provides no disclosure that overcomes the deficiencies of Strachan (as discussed under (I)) and Nakatomi in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn, as discussed under (II). Accordingly, the combination of Strachan and Nakatomi with Miller fails to establish a *prima facie* case of obviousness with respect to claims 13-20.

VI. Claims 13-16 are not obvious under 35 U.S.C. §103(a) over U.S. Patent No. 3,940,917 to Strachan ("Strachan") in combination with U.S. Patent No. 3,719,664 to Hayes et al. ("Hayes") and further in view of U.S. Patent No. 3,867,242 to Miller ("Miller")?

Miller provides no disclosure that overcomes the deficiencies of Strachan (as discussed under (I)) and Hayes in providing at least one elastomeric fiber forming a strand which is aligned adjacent and substantially parallel to at least one hard yarn to provide an aligned yarn, as discussed under (III). Accordingly, the combination of Strachan and Hayes with Miller fails to establish a *prima facie* case of obviousness with respect to claims 13-16.



**CONCLUSION**

Considering that Strachan fails to disclose, teach or suggest an elastomeric strand and a hard yarn which form an aligned yarn, the combination of Strachan with any of the other references fails to establish a *prima facie* case of obviousness. Furthermore, Strachan teaches away from combination with the other cited references which teach the use of a sizing material since Strachan teaches that there is no need for fusing the filaments of the yarn provided therein. Therefore, reconsideration and withdrawal of the rejections under Section 103 are appropriate and respectfully requested.

In view of the remarks set forth above, reconsideration and withdrawal of the rejections are appropriate and respectfully requested. Appellant submits that the present claims are patentably distinct over the art and in allowable form. Early allowance is, therefore, solicited. If the Examiner has any questions regarding this response, the Examiner is invited to contact the undersigned attorney.

Date: October 3, 2008

Respectfully submitted,



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**8. CLAIMS APPENDIX**

Claims 1-8 (canceled)

9. (previously presented) A composite yarn, comprising:

at least one elastomeric fiber forming a strand with a total draft in a range from 1.2X to 6.2X of an original spun length of the strand;

at least one hard yarn selected from the group consisting of: synthetic fibers, natural fibers and a blend of synthetic and natural fibers, wherein said hard yarn is aligned adjacent and substantially parallel to said strand to make an aligned yarn; and

a dried or cured size material forming an adhesive that adheres the strand and hard yarn of the aligned yarn together.

10. (original) The composite yarn of claim 9, wherein the strand is formed from a spandex yarn of a denier of from 20 to 140 before stretching, and wherein the hard yarn has a total denier of from 45 to 900.

11. (original) The composite yarn of claim 9, wherein the size material comprises a sizing agent and a wax.

12. (original) The composite yarn of claim 9, wherein the dried size material forms an adhesive coating on the aligned yarn.

13. (original) An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the warp; and composite yarns of claim 9 and hard yarns in the weft,

wherein the ratio of said composite yarns to said hard yarns is from 1:1 to 1:4 in both the warp and the weft.

14. (original) An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the weft; and

hard yarns in the warp,

wherein the ratio of said composite yarns to said hard yarns in the weft ranges from 1:1 to 1:4.

15. (original) An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the warp; and

hard yarns in the weft;

wherein the ratio of said composite yarns to said hard yarns in the warp ranges from 1:1 to 1:4.

16. (original) An elastic knit fabric comprising upon knitting and before final finishing:

composite yarns of claim 9.

17. (original) An elastic woven fabric after final finishing, comprising:

strands of bare, essentially untwisted elastomeric fibers in the weft that are substantially parallel and adjacent to hard yarns in the weft.

18. (original) A garment comprising the elastic woven fabric of claim 17.

19. (original) An elastic woven fabric after final finishing, comprising:

strands of bare, essentially untwisted elastomeric fibers in the warp that are substantially parallel and adjacent to hard yarns in the warp, wherein the ratio of said elastomeric fibers to hard yarns in the warp ranges from 1:2 to 1:4.

20. (original) A garment comprising the elastic woven fabric of claim 19.

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#### **9. EVIDENCE APPENDIX**

No additional evidence was submitted in this application including evidence pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132.

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**10. RELATED PROCEEDINGS APPENDIX**

No related appeals or interferences are known to Appellant or Appellants' legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.